

STATUS OF VEHICULAR NOISE CONTROL IN TAIWAN

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1. INTRODUCTION

Continuously high growth rate of vehicle come with the continuously growth of economic activity. The high level of noise along the road cause by the emission from the ever increasing traffic become a severe problem in the urban area. From 1990, the EPA of Government of R.O.C. begin the program of new vehicle noise control to improve and control the traffic noise problem in Taiwan by control the new vehicle noise emission limit.

2. REGULATION

Promulgated in 1990 and revised in 1992, the Vehicle Noise Emission Control Regulation stipulate the vehicle Category, noise emission limit for each category, vehicle noise emission test standard, inspection organization qualification, emission test operator qualification and licensing procedure.

All the vehicle is classified in four categories

(1)passenger car, wagon (2) bus, truck under 3.5 Ton (3) bus, truck over 3.5 Ton and (4) motorcycle. The motorcycle is subcategorized into (1) under 50 c.c. (2) 50c.c~100c.c. (3) over 100c.c.

The 1995 emission noise limit for each category is shown in Table 1. The parenthesized value is the limit of 1990. Those limit is very close to the EC and Japan standard. These slow transition from higher to lower limit allow the manufacture and importer have time to manufacture and import the quiet vehicle.

3. EXECUTION PROCEDURE

There are four program in the control procedure.

- (1) Qualified Type Approve Program: This is the key part of the control procedure. First, all the manufactures and import dealers have to apply to EPA for Type Number before manufacture and import the vehicles and send a to standard vehicle to the type approve inspection organization for the noise emission test according to the CNS test standard (Chinese National Standard). If the test result meet the limit of noise emission, this type of vehicle grant the approve certification. Only the vehicle with valid approve certification can be sold in Taiwan.
- (2) QC Test Program : In order to improve the quality of vehicle, the EPA encourage the manufacturer and importer to set up the QC test program to test the emission level. Use passenger car as example, the maker or importer with QC test program need send one vehicle for every 500 vehicles manufactured or imported for test. Those without QC test program need send one vehicle for every 250 vehicles. This way all the vehicle sold in Taiwan meet the requirement of EPA.
- (3) New Vehicle Sample Inspection Program: EPA non-periodically visit the maker and importer and randomly select the vehicles which send to the approved inspection organization for test. The higher noise limit vehicle and higher sold volume vehicle have higher possibility pick by EPA. If the vehicle does not pass the test, EPA pick another 10 vehicles from the maker or importer for testing. If the average test results do not meet the limit, then the approve certification is revoked. This type of vehicle from the maker or importer can not sell in Taiwan.
- (4) Public Relation Program: EPA publish an annual booklet of the noise of all vehicle type sold in Taiwan. The vehicle buyer have the choice to purchase the type of vehicle with lower noise and low pollution and put pressure on maker/dealer to manufacture and import the low noise and low pollution vehicle. In the booklet also include the description of noise source and pollution source, tip of maintenance and driving to remind the public to be an environmental-friendly vehicle owner.

4. STATUS OF EXECUTION

There are many domestic vehicle manufactures and vehicle import company that import different brand of vehicle from U.S.A, Europe and Asia. In order to eliminate the different test results from different country with different test standard. The EPA adopt the CNS 5799 and CNS 3110 test standard as the vehicle noise emission test method.

These test standard is similar to the ISO 362 test standard and include the accelerate noise emission test and stationary noise emission test. All the vehicle noise test is perform by commercial inspection organization. All the inspection organizations include the Q.C. test department of manufacture are qualified by the EPA. The type approve test is performed by a independent private inspection organization which is not only qualified by EPA, but also qualified by CNLA (Chinese National Laboratory Accreditation). CNLA is the national laboratory accreditation system in Taiwan, and similar to the NVLAPC (National Voluntary Laboratory Accreditalional Program) of USA.

From 1991 EPA begin annual statistical analysis of all test results for Qualified Type Approve Inspection, New Vehicle Sample Inspection, and compare the limit of vehicle noise emission with the noise test data (Fig. 1). The noise emission limit in R.O.C. is shown in Table 2 compare with those in EU and Japan.

The member of approve vehicle reduced from 1080 in 1994 to 702 in 1995 as show in the Table 3. This 30% decrease is cause by lower the limit of vehicle noise emission. The noisy vehicle can not pass the Qualified Type Approve test.

5. CONCLUSIONS

The main purpose of new vehicle noise control is gradually replace the old and noisy vehicles with new and quiet vehicles. Due to the fact that life span of vehicle can last for 20 years, it take a long time to retire the noisy vehicle naturally and show the effect of this control policy. The traffic noise is also influenced by many factor beside the vehicle emission level. i.e. vehicle maintenance condition, driving habit of different driver, traffic volume, traffic management, etc. The EPA not only will strengthen the control of vehicle emission, but also actively coordinate with Ministry of Transportation and Communication simultaneously improve the road condition and traffic management, so that the quality of life can be improved.

	Passenger Cars	Bus & truck 3.5T ≤	Bus & Truck 3.5T ≥	Motorcycles		
				< 50c.c.	50-100c.c.	> 100c.c.
Acceleration	78 (83)	83 (86)	83 (89)	72 (80)	75 (84)	78 (86)
Stationary	103	103	107	95	99	99

Table 1. 1995 Vehicle Noise Emission Limits in R.O.C.

	EU [1]		Japan [1]		R.O.C	
Heavy Trucks	84dB(A)		83dB(A)		83dB(A)	
Passenger Cars	77dB(A)		78dB(A)		78dB(A)	
Motorcycle	> 500c.c.	80dB(A)	> 250c.c.	75dB(A)	> 100c.c.	78dB(A)
	< 125c.c.	77dB(A)	50-125c.c.	72dB(A)	50-100c.c.	75dB(A)
					< 50c.c.	72dB(A)

Table 2 : 1995 Vehicle Noise Emission Limits in EU, Japan and R.O.C.

		1994	1995
Qualified Type Approve	Import	743	484
	Domestic	242	139
	Motorcycles	95	79
	Sub-total	1080	702
New Vehicle Sample Inspection	Car	299	174
	Motorcycles	91	4
	Sub-total	390	178

Table 3: 1994, 1995 Qualified Type Approve and New Vehicle Sample Inspection

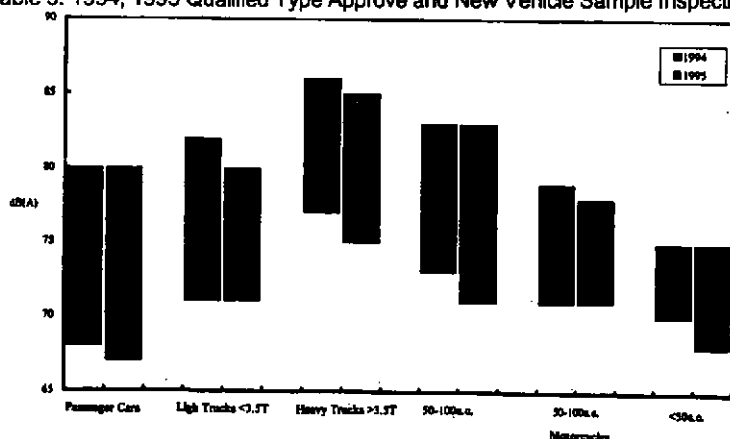


Fig. 1: 1994, 1995 Accelerating Noise Emission Level Distribution of Six Vehicle Type

Reference [1]: Ulf Sandberg (1995) "Report by the International Institute of Noise Control Engineering Working on Road Vehicle Noise" NOISE/NEWS INTERNATIONAL 1995, vol. 3, no 5, P85-113